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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,975	07/03/2006	Aaron Christian Cunningham	2486-001-03	6536

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EXAMINER

CARTON, MICHAEL

ART UNIT

PAPER NUMBER

4118

MAIL DATE

DELIVERY MODE

11/10/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/559,975

Applicant(s)

CUNNINGHAM ET AL.

Examiner

MICHAEL CARTON

Art Unit

4118

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/3/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-23 is/are rejected.
- 7) ☒ Claim(s) 14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/8/2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S5108)
Paper No(s)/Mail Date 7/03/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This office action is responsive to the amendment filed on 7/3/2006. As directed by the amendment: claims 1, 7-8, 11, 14-16, 18-22 have been amended, no claims have been cancelled and new claim 23 has been added. Thus, claims 1-23 are presently pending in this application.

Specification

2. The disclosure is objected to because of the following informalities: Page 3 line 11 recites “whilst” which appears to be a misspelling of the word “while”. Appropriate correction is required.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter “an inner peripheral wall of the piston sliding along the elongate portion” (claim 6) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter "an inner peripheral wall of the piston sliding along the elongate portion" which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 102

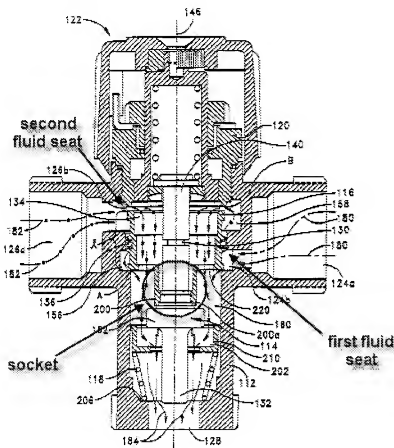
8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

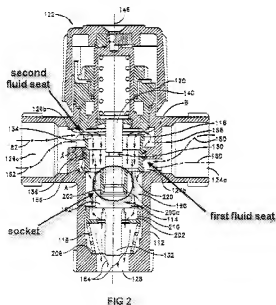
9. Claims 1-3, 5, 7-13, 20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Lebkuchner (US Pat 6079625).

10. Regarding claim 1, Lebkuchner discloses a thermostatic mixing valve comprising a valve body 112 (fig 2), a first fluid inlet 124a (fig 2), a second fluid inlet 126a (fig 2), a fluid outlet 128 (fig 2) and a mixing chamber 160 (fig 2) located between the respective fluid inlets and fluid outlets, a thermostatic element 114 (fig 2), and a piston 130 (fig 2). This piston 130 (fig 2) also throttles the flow of the first fluid and the second fluid by varying its position relative to the respective fluid seats, as shown in fig 2 below, and described in column 2 lines 53-66.



11. Regarding claim 2, Lebkuchner further discloses a second fluid seat (fig 2 above) formed as an elongate portion extending in the direction of the movement of the actuator piston 130 (fig 2) allowing the piston 130 (fig 2) to slide along the elongate portion.

12. Regarding claim 3, Lebkuchner further discloses the elongate portion of the second fluid seat as being formed on the valve body 112 (fig 2).
13. Regarding claim 5, Lebkuchner further discloses the elongate portion of the fluid seats as being formed on a member located within the valve body 112 (fig 2).
14. Regarding claim 7, Lebkuchner further discloses the fluid seats are formed in a portion of the valve body (first fluid seat, second fluid seat fig 2).
15. Regarding claim 8-9, Lebkuchner further discloses an adjustment mechanism 122 (fig 2) for adjusting the rest position of the thermostatic element (column 7 lines 42 – 46), the adjustment mechanism 122 (fig 2) is arranged to adjust the positioning of the thermostatic element relative to the piston so that a set temperature of the fluid through the fluid outlet 128 (fig 2) can be varied.
16. Regarding claim 10, Lebkuchner further discloses socket 200 (fig 2), wherein the piston 130 (fig 2) engages the thermal actuator 114 (fig 2).



17. Regarding claim 11, Lebkuchner further discloses a diffuser 202 (fig 2-4) with a peripheral wall 210 (fig 2-4), a number of fins 212 (fig 2-4) projecting inwardly from the peripheral wall 210 (fig 2-4) toward the center of the diffuser 202 (fig 2-4), and an annular plate 214 (fig 2-4) projecting inwardly from the peripheral wall 210 to form an aperture 216 (figs 2-4). This is an equivalent of a mixing tube and also directs the flow of the first and second fluids onto the thermostatic element 114 (fig 2).

18. Regarding claim 12, Lebkuchner further discloses the diffuser 202 (fig 2), or mixing tube, is configured to seat the trailing edge of the thermostatic element 114 (fig 2).

19. Regarding claim 13, Lebkuchner further discloses a leading edge of the thermostatic element 114 (fig 2) is arranged to contact a portion of the piston 130 (fig 2).

20. Regarding claim 22, Lebkuchner further discloses a valve body 112 (fig 2) having a first fluid inlet 124a (fig 2), a second fluid inlet 126a (fig 2), a fluid outlet 128 (fig 2), a mixing chamber 160 (fig 2) located between the respective fluid inlets and the fluid outlets, a piston 13 (fig 2) arranged to regulate the flow of the first and second fluids from their respective inlets into the mixing chamber 160 (fig 2), a thermostatic element 114 (fig 2) located in the mixing chamber 160 (fig 2), and an adjustment mechanism 122 (fig 2) (column 7 lines 43-46) for adjusting the rest position of the thermostatic element.

21. Claims, 1, 8, 16 -17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kline (US Pat 5203496).

22. Regarding claims 1, 8 and 16, Kline discloses a thermostatic mixing valve 10 (fig 1) having a valve body 32 (fig 1) with a first fluid inlet 11 (fig 1) and a second fluid inlet 12 (fig 1), a fluid outlet 13 (fig 1), a mixing chamber 30 (fig 1) between the fluid inlets 11, 12 (fig 1), a

thermostatic element 26 (fig 1) located in the mixing chamber 30 (fig 1), a piston 19 (fig 1) which moves in response to the thermostatic element 26 (fig 1) throttling the flow of fluid into the mixing chamber 30 (fig 1) by varying its position relative to a first fluid seat 18 (fig 1), said piston also arranged to throttle the flow of the second fluid into the mixing chamber by varying its position relative to a second fluid seat 18 (fig 1), wherein the second fluid 18 (fig 1) seat is configured to allow for movement of the piston 19 (fig 1) as a result of continued expansion of the thermostatic element 26 (fig 1). Fluid seats 18 (fig 1) are formed through liner 17 (fig 1). Also disclosed is an adjustment mechanism comprising bottom plug 21 (fig 1), cavity 22 (fig 1), spring 23 (fig 1), push rod 25 (fig 1), adjustment screw 27 (fig 1), and shaft 28 (fig 1). Furthermore, adjustment screw 27 (fig 1) and shaft 28 (fig 1) are configured so that an inner portion of the shaft (pin) is in contact with a trailing end of the thermostatic element 26 (fig 1).

23. Regarding claim 17, Kline further discloses an adjustment pin 27 (fig 1) which is accessible from the outside of the valve body 32 (fig 1) enabling movement of the pin 28 (fig 1) which adjusts the tension of the spring 23 (fig 1) resulting in adjustment of the positioning of the thermostatic element 26 (fig 1) relative to the piston 19 (fig 1).

24. Regarding claim 21, Kline discloses a method of adjusting the adjustment mechanism comprising adjustment screw 27 (fig 1), shaft 28 (fig 1), thermostat 13 (fig 1), and push rod 25 (fig 1) to modify the rest position of the thermostatic element 26 (fig 1) relative to the piston 19 (fig 1) to thereby change the flow of the first and second fluids into the mixing chamber 30 (fig 1) until the temperature of the outlet fluid through the fluid outlet 13 (fig 1) is at a desired set temperature. Adjustment screw 27 (fig 1) acts against spring 23 (fig 1) and thus allows the vertical position of the thermostat 26 (fig 1) and ultimately of the piston 19 (fig 1) to be adjusted,

thereby changing the flow of the first and second fluids into the mixing chamber 30 (fig 1) until the temperature of the outlet fluid through the fluid outlet 13 (fig 1) is at a desired set temperature. (Column 3 lines 4-8).

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lebkuchner.

Regarding claim 4, Lebkuchner discloses all claimed elements except for an outer peripheral wall of the piston sliding along the elongate portion. It would be obvious for one ordinarily skilled in the art at the time of the invention was made to modify Lebkuchner so that the piston 130 (fig 2) and spool 116 (fig 2) are one unit forming one solid piston allowing the outer peripheral wall of the piston to slide along the elongate portion of the valve body, for the purpose of minimizing assembly parts and costs associated with having a piston and spool as separate items.

27. Regarding claim 6, as best understood, Lebkuchner discloses all claimed elements except for an outer peripheral wall of the piston sliding along the elongate portion. It would be obvious for one ordinarily skilled in the art at the time of the invention to modify Lebkuchner so that the piston 130 (fig 2) and spool 116 (fig 2) are one unit forming one solid piston allowing the outer peripheral wall of the piston to slide along the elongate portion of the valve body, for the purpose

of minimizing assembly parts and costs associated with having a piston and spool as separate items.

28. Claims 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kline in view of DeSalve (US Pat 4469275). Kline teaches all of the claimed elements except for the adjustment mechanism being threadedly connected to the valve body. DeSalve teaches a valve body 25 (fig 1) and an adjustment pin 35 (fig 1) which is threadedly connected to the valve body 25 (fig 1). It would be obvious for one ordinarily skilled in the art at the time of the invention to modify Kline such that the adjustment pin 25 (fig 1) is threadedly connected to the valve body 32 (fig 1), as taught by DeSalve, for the purpose of providing a suitable connection means that allows adjustable positioning of the thermostat relative to the piston.

29. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lebkuchner (US Pat 6079625) in view of Antoniello (US Pat 6021952). Lebkuchner discloses a thermostatic mixing valve comprising all the claimed elements except for a check valve mounted adjacent each of the first and second fluid inlets to prevent back flow of fluid through the respective inlets. However, Antoniello teaches a combination check valve, shutoff, and seal for thermostatic valves (fig 5, fig 6) (column 9 lines 9-24). It would be obvious to one ordinarily skilled in the art at the time of the invention was made to modify Lebkuchner to include a check valve, as taught by Antoniello, for the purpose of allowing fluid to flow only towards the valve body thereby preventing backflow.

Allowable Subject Matter

Claims 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL CARTON whose telephone number is (571)270-7837. The examiner can normally be reached on Monday-Friday 7:30am - 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quang Thanh can be reached on 571-272-4982. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C./
Examiner, Art Unit 4118

/Quang D. Thanh/
Supervisory Patent Examiner,
Art Unit 4118